ENGLISH TRANSLATION OF ARTICLE 34 AMENDMENTS IN PCT/JP2004/003995 (2 pp.)

Claims (Amended)

1. Canceled

2. Canceled

3. A quality control method of a direct methanol fuel cell in which a fuel electrode and an air electrode each of which contains an electrode catalyst consisting of at least a noble metal or carbon supporting the noble metal and a proton conductive polymer solid electrolyte are provided on respective sides of a proton conductive polymer solid electrolyte membrane and that is made capable of generating electricity by being supplied with methanol and water to the fuel electrode and being supplied with oxygen in the air to the air electrode, wherein a characteristic of elution of the fuel electrode material into the fuel is evaluated.

4. A quality control method of a direct methanol fuel cell according to claim 3, wherein the elution characteristic is evaluated by detecting a change in the characteristic of the fuel electrode associated with the elution of the fuel electrode material into the fuel when the fuel electrode is brought into contact with the fuel whose concentration exceeds 2 M or the fuel whose temperature exceeds 80°C.

5. An operation method of a direct methanol fuel cell in which a fuel electrode and an air electrode each of which contains an electrode catalyst consisting of at least a noble metal or carbon supporting the noble metal and a proton conductive polymer solid electrolyte are provided on respective sides of a proton conductive polymer solid electrolyte membrane and that is made capable of generating electricity by being supplied with methanol and water to the fuel electrode and being supplied with oxygen in the air to the air electrode, wherein, when the elution of the fuel electrode material into the fuel is detected, elution detection is fed back so that the fuel concentration is decreased, or the operating temperature is lowered, or an output of the fuel cell is limited.

6. An operation method of a direct methanol fuel cell according to claim 5, wherein a window through which a color of the fuel is observed or a sensor for detecting the color of the fuel is provided, so that the elution of the fuel electrode material into the fuel is detected by a change in the color of the fuel.

7. A direct methanol fuel cell in which a fuel electrode and an air electrode each of which contains an electrode catalyst consisting of at least a noble metal or carbon supporting the noble metal and a proton conductive polymer solid electrolyte are provided on respective sides of a proton conductive polymer solid electrolyte membrane and that is made capable of generating electricity by being supplied with methanol and water to the fuel electrode and being supplied with oxygen in the air to the air electrode, further comprising:

means for detecting or inputting the elution of the fuel electrode material into the fuel; and

means for, when the detection or inputting is done, feeding back the detection of elution so that the fuel concentration is decreased, or the operating temperature is lowered, or an output of the fuel cell is limited.

8. A direct methanol fuel cell according to claim 7, wherein a window through which a color of the fuel is observed or a sensor for detecting the color of the fuel is provided.

9. (Amended) A direct methanol fuel cell in which a fuel electrode and an air electrode each of which contains an electrode catalyst consisting of at least a noble metal or carbon supporting the noble metal and a proton conductive polymer solid electrolyte are provided on respective sides of a proton conductive polymer solid electrolyte membrane and that is made capable of generating electricity by being supplied with methanol and water to the fuel electrode and being supplied with oxygen in the air to the air electrode, wherein at least the fuel electrode is heat-treated by at least one of pressure joining thereof to the solid electrolyte membrane at 150-250°C, drying at 120-250°C in a state where the proton conductive polymer solid electrolyte was mixed with the electrode, and irradiation of radiation under heating.

10. Canceled

11. Canceled

12. Canceled

13. (Amended) A method for manufacturing a direct methanol fuel cell in which a fuel electrode and an air electrode each of which contains an electrode catalyst consisting of at least a noble metal or carbon supporting the noble metal and a proton conductive polymer solid electrolyte are provided on respective sides of a proton conductive polymer solid electrolyte membrane and that is made capable of generating electricity by being supplied with methanol and water to the fuel electrode and being supplied with oxygen in the air to the air electrode, further comprising:

a step of heat-treating the fuel electrode by at least one of pressure-joining thereof to the solid electrolyte membrane at 150-250°C, drying at 120-250°C in a state where the proton conductive polymer solid electrolyte was mixed with the electrode, and irradiation of radiation under heating.

14. Canceled

15. (Amended) A method for manufacturing a direct methanol fuel cell according to claim 13, wherein in the heat treatment step, the fuel electrode is pressure-joined to the solid electrolyte membrane at a temperature of 170-210°C.

16. Canceled

17. Canceled

18. A method for manufacturing a direct methanol fuel cell according to claim 13, wherein the heat treatment step is conducted in a vacuum or an inert gas.